

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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COUNTRY USSR (Kuybyshev Oblast)

REPORT

SUBJECT Oil Refinery in the Kuybyshev Area

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TE a refinery in Novokuybyshevsk. The report supplies information on personnel, plant construction and maintenance, products manufactured, manufacturing processes and installations.

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2. Eighty kilometers from Kuybyshev lies Novokuybyshevsk, a city which was built ten years ago for employees in the industries of the area, where earlier there was only the deserted steppe. This city now has about 80,000 inhabitants.
3. Construction began in 1948 on the refinery which was visited. The refinery now has a capacity of 15 million tons of crude oil per year, which is delivered by pipeline from oil fields situated in various locations in the Kuybyshev area up to a distance of 400 kilometers from the refinery. The refinery presently employs about 4,000 persons, of which about 400 work in the laboratories. With the exception of two persons, the laboratory personnel consisted of women. Likewise there were several women who were chief technicians, among them one who was in charge of three catalytic-cracking installations. Mostly female personnel were used in the control room. On the other hand, male personnel were used for heavy work and in most of the supervisory positions.
4. The refinery, which lay in direct connection with the city, was built on a relatively flat area with the various elements of the installation placed on certain natural plateaus. The construction was of the usual Soviet standard.
5. The apparatus - column heat exchangers, pipes, etc. - was poorly finished, but the installation of the apparatus was carried out very rationally. Plantings had been put between the various elements of the installation to make it more pleasant, and it was unusually clean. No oil spillings could be seen anywhere.

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6. The refinery was a complete refinery intended to work with crude oils from various wells, and with a variety of qualities, including sulphur contents ranging from relatively low values up to 3 per cent. Through desalting the salt content was brought down to 30-50 milligrams per liter. Soda dissolution was carried out during distillation, and during the ten years of operation in the factory there had been no corrosion problems.

7. The following products were manufactured at the installation:

A variety of industrial gasolines and solvents, including Kylol - which is obtained through aromatic reforming of a gasoline fraction - and motor gasolines of various qualities. The lowest quality gasoline has an octane rating (by the engine method) of 66 and contains no TEL, while the highest quality has an octane rating (by the same method) of 90 and may hold up to 0.6 per cent by volume of TEL. Gasoline obtained by direct distillation is blended with gasoline from the catalytic-cracking installations.

Kerosene of various qualities is also manufactured. Diesel oil for engines is made partly through direct distillation, partly through catalytic cracking. In the latter case it passes through a hydrogenating apparatus. The diesel oil received in this way through catalytic cracking is to a certain extent delivered unblended, but it is also used for blending with diesel oil made through atmospheric distillation. Residue oils from the atmospheric distillation go partly to a vacuum distillation installation for further treatment into lubricating oil and asphalt, and partly in their original state to a blending installation for blending with the residue oils from a cracking installation. A part of the thick burning-oils went directly to a large central steam power-plant, where together with the residue gases from the refinery they were used for production of electric energy.

Transformer oil distillate, lubricating oil distillate and asphalt residue are obtained through vacuum distillation. The lubricating oil distillate passed through a propane de-asphalting installation. The asphalt obtained went to an asphalt installation, where it was blended with asphalt from the vacuum distillation installation. After propane de-asphalting, the lubricating oil distillate went through a phenol extraction process, which was said to have been worked out in the Soviet Union and to be especially suitable to their oils.

8. At both the institute in Moscow and the refinery in Kuybyshev it was said to be important that the sulphur content not be brought down too far during the extraction process, since sulphur up to a certain limit has a positive effect on the quality of lubricating oils. After phenol extraction the lubricating oil refinement went through a de-paraffining, for which a blend of benzol and acetone was used. The lubricating oil is treated with Fuller's earth and filtered, after which the finished base oils go out to a blending installation for mixing with additives and finishing treatments.
9. A part of the paraffins obtained went to a sweating plant. White paraffins with melting points up to 58 degrees centigrade was manufactured. The major portion of the paraffins was sent to a large new installation for direct oxidation into fatty acids by a Soviet method.

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10. There was a gas separation installation at the refinery. A large part of the gases will, in the future, be delivered to a neighboring installation for petro-chemical production. Synthetic rubber is already manufactured there. The Salzgitter firm is constructing a large petro-chemical installation which will depend on delivery of gas from the refinery. The gases which cannot be used by the refinery's various installations are presently changed into electrical energy at the large steam powerplant.
11. There is also an installation in the area for the manufacture of catalysts for the catalytic-cracking process. The catalysts seemed to be of relatively uneven quality. Certain "marbles" appeared to have a good firmness, while others could be crushed. The Russians probably have certain problems with making a good catalyst. The problem with sediment in the thick burning oils possibly is due to this factor.
12. Besides the central control laboratory, where some research is also carried out, there are a number of special laboratories situated in connection with the installations. The production is controlled through flow tests every fourth hour, and analysis of each work tank.
13. It appears as though a great amount of work has been put into controlling the products in the various stages of production through a thorough control activity. The impression is received that the refinery produces reliable qualities.
14. The refinery was equipped with a surprising small number and small-sized tanks in consideration of the character and amount of production. The explanation was that they had succeeded in achieving a continuous production, including the movement from one installation to another, and that the delivery of crude oil to the installation and the removal of the finished products takes place at the same pace.

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